Claims

1. An apparatus for food waste treatment, comprising:

a body;

a hopper provided at an upper portion of the body to put food wastes into the body;

a crusher installed in the body to crush the food wastes put into the body through the hopper, the crusher comprising a main crushing cutter and a main feed screw;

an agitating container having an agitator therein and provided at a lower portion in the body to agitate the food wastes which were crushed by and dropped from the crusher;

a sewage purifying tank provided under the crusher in the body, so as to purify sewage generated from the food wastes during a crushing operation of the crusher, the sewage purifying tank including:

an antibacterial filter provided at an upper portion in the sewage purifying tank; and

a plurality of bio-ceramic balls contained in the sewage purifying tank and photocatalytic-coated on exterior surfaces thereof; and

a drain pipe extending from the sewage purifying tank, with a magnetic material mounted on an end of the drain pipe to secondarily purify the sewage drained from the sewage purifying tank into a sewer pipe.

2. The apparatus according to claim 1, further comprising a photocatalytic filter provided in the body to remove odor emitted from the food wastes when the food wastes are agitated by the agitator, the photocatalytic filter comprising:

a pair of carbon ball containing blocks to contain a plurality of nano-carbon balls therein and respectively provided at inlet and outlet sides of the photocatalytic filter;

a plurality of titanium dioxide blocks each having a plurality of pores; and

a plurality of ultraviolet lamps arranged between the pair of carbon ball containing blocks such that the plurality of titanium dioxide blocks and the plurality of ultraviolet lamps are alternately arranged between the pair of carbon ball containing blocks.

3. The apparatus according to claims 1 or 2, further comprising a catalytic oxidation filter provided at a predetermined position in the body to remove the odor emitted from the food wastes when the food wastes are agitated by the agitator, the catalytic oxidation filter comprising a catalytic oxidation block and a heater to maintain a desired temperature of the catalytic oxidation block.

4. The apparatus according to claim 1, wherein the crusher which is installed in the body is housed in a crusher housing, with a sub-crushing cutter provided in the crusher housing to engage with the main crushing cutter, the sub-crushing cutter having a rotating shaft which is held at both ends thereof in guide holes provided on both sidewalls of the crusher housing, such that the sub-crushing cutter moves within a predetermined range provided by the guide holes.

5. The apparatus according to claim 1, wherein the agitating container further comprises a rod-type heater therein to dry the food wastes when the food wastes are agitated by the agitator, the rod-type heater having a role as a rotating shaft of the agitator.

6. The apparatus according to claim 1, wherein the hopper further comprises a push bar therein to forcibly put the food wastes into the crusher in the body.

7. The apparatus according to claim 4, wherein the sub-crushing cutter of the crusher is tapered at a first side thereof, with a sub-feed screw integrally provided at a second side of the sub-crushing cutter.

8. The apparatus according to claim 1, wherein the crusher is placed in the body to be offset from a bottom part of the hopper, and the agitating container comprises a plurality of containers.

9. The apparatus according to claims 1 or 8, further comprising a positive temperature coefficient (PTC) thermister heating element or a carbon fiber heater provided under the agitating container to heat the agitating container.

10. The apparatus according to claims 1 or 2, further comprising:

an air flow channel provided above the agitating container to guide air from the agitating container into the photocatalytic filter;

a cooling fin mounted on the air flow channel to condense vapor in the air of a high temperature guided from the agitating container into the phtocatalytic filter through the air flow channel; and

a thermoelectric module mounted on an end of the cooling fin such that a cooling side of the thermoelectric module is in contact with the end of the cooling fin.